نموذج ثانوية أزهرية 1

الأزهر الشريف
قطاع المعاهد الأزهرية
الإدارة المركزية للامتحانات
وشئون الطلاب والخريجين

عدد الصفحات (١٦) صفحة
وعلى الطالب مسئولية المراجعة
والتأكد من ذلك قبل تسليم الكراسة

الورقة الامتحانية

لامتحان الشهادة الثانوية الأزهرية - الدور: الأول

عام ١٤٣٧/ ١٤٣٨هـ - ٢٠١٦/ ٢٠١٧م

المـــادة : الفيزياء "لغات"   القسم : العلمي   زمن الإجابة : ثلاث ساعات

المذهـــب ....

السؤال	الدرجة بالأرقام	اســـم المصحح ثلاثيًا
الأول		
الثاني		
الثالث		
الرابع		
الخامس		
السادس		
السابع		
الثامن		
المجموع		

مجموع الدرجات (مكتوبًا بالحروف)
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....
....
....

اســـم المراجع العددي ثلاثيًا:
....

اســـم المراجع الفني ثلاثيًا:
....

الرقم السرى

مجمع مطابع الأزهر الشريف

الرقم السرى

الأزهر الشريف – قطاع المعاهد الازهرية
الإدارة المركزية للامتحانات وشئون الطلاب والخريجين

عدد الصفحات (١٦) صفحة
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نموذج ثانوية أزهرية 1

اســـم المعـــهـــد: ....

اسم الطالب ولقبه: ....

المـــــادة: .... المذهـــــب: ....

التـــاريخ: .... رقم الجلوس: ....

تنبيه على الطالب كتابة اسمه ولقبه كاملا ويحظر عليه كتابة أي علامة تدل عليه داخل ورقة الإجابة.

توقيع الملاحظين بالاسم : ١- .... ٢- ....

مجمع مطابع الأزهر الشريف

تعليمات هامة

عزيزي الطالب / عزيزتي الطالبة: -

- اقرأ السؤال بعناية، وفكر فيه جيدًا قبل البدء في إجابته.
- أجب عن جميع الأسئلة ولا تترك أي سؤال دون إجابة .
- عند إجابتك على الأسئلة المقالية ، أجب فيما لا يزيد عن المساحة المحددة لكل سؤال .

مثال :

....
....
....

- عند إجابتك على أسئلة الاختيار من متعدد (إن وجدت) ظلل الدائرة ذات الرمز الدال على الإجابة الصحيحة تظليلًا كاملًا لكل سؤال .

مثال : الإجابة الصحيحة (د) مثلًا

أ	ب	جـ	د ●

- في حالة ما إذا أجبت إجابة خطأ ، ثم قمت بشطبها وأجبت إجابة صحيحة تحسب الإجابة صحيحة .
- فى حالة ما إذا أجبت إجابة صحيحة ، ثم قمت بشطبها وأجبت إجابة خطأ تحسب الإجابة خطأ.
- في حالة التظليل على أكثر من رمز ، تعتبر الإجابة خطأ.
- **ملحوظة : يفضل عدم تكرار الإجابة على الأسئلة.**
- عدد صفحات الكراسة (١٦) صفحة.
- تأكد من ترقيم الأسئلة تصاعديًّا ، ومن عدد صفحات كراستك، فهى مسئوليتك .
- **ترسم العلاقات البيانية في ورقة الرسم البياني المخصصة لذلك.**
- زمن الامتحان (**ثلاث ساعات**).
- الدرجة الكلية للامتحان (٦٠) درجة لكل سؤال (١٢) درجة لكل جزئية درجة واحدة.
- عند احتياج الطالب للإجابة على أي فقرة وذلك عند حدوث أي سبب يقتضي ذلك؛ يستخدم المسودة بآخر الورقة الامتحانية مع كتابة رقم السؤال والفقرة بوضوح، بشرط ألا تكون الإجابة مكررة.

هذا الجزء

غير مخصص للإجابة

ورقة رسم بيانى

Question 1:

A) Put the statement [greater than] , [smaller than] or [equal to] between the brackets in each of the following :

1- The galvanometer resistance [..................] it resistance after increasing its range and decreasing its sensitivity as an ammeter .

2-Hydrogen spectrum wavelengths located within Lyman's series [..................] wavelengths located within Balmer's series.

3- The self-inductance of a solenoid [..................] of its self-inductance when it is compressed on the direction of its axis and its turns get closer.

4- The magnetic flux density at the center of a circular ring of radius (r) carrying an electric current of intensity (I) [..................] the magnetic flux density at a point at a distance (r) of a straight wire carrying an electric current of intensity (3I) .

B) First : Why is preferred to use:

5- Digital electronics than analog electronics .

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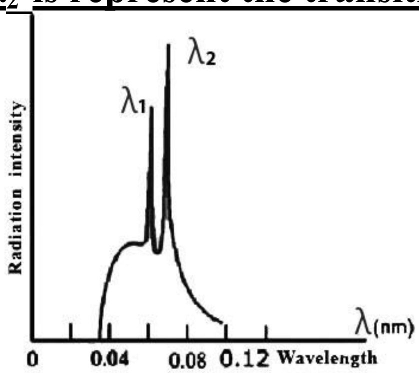
6- Soft iron silicon in manufacturing the electric transformer core .

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....

....

Second : The shown figure , illustrates the characteristic X- ray spectrum of molybdenum target which resulting from the return of the target electrons from the states n= 2 and n= 1 . Which of the lines (peaks) λ_1 or λ_2 is represent the transition from :



7- n = 2 to n= 1

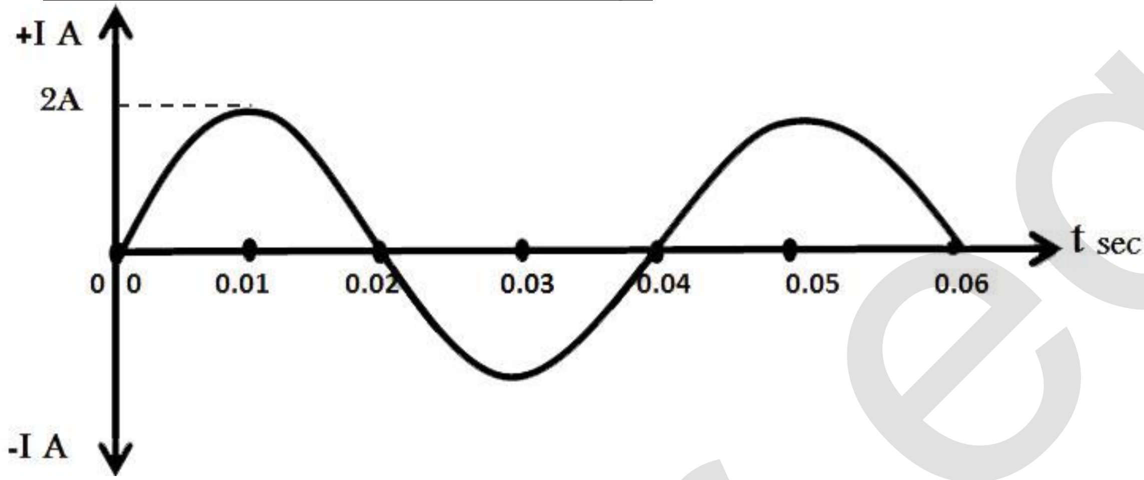
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8- n= 3 to n= 1

....

C) The following figure shows the relation between the produced electric current intensity (I) from a dynamo, its coil resistance 10Ω and time of the rotation of its coil (t) .

Find the value of each the following :



9- The effective value of the alternating current.

....

....

....

10- The effective value of the generated electromotive force.

....

....

....

11-The angular velocity .

....

....

....

12- The magnetic flux density , if the number of turns of its coil is 100 turns and its cross sectional area is $20cm^2$

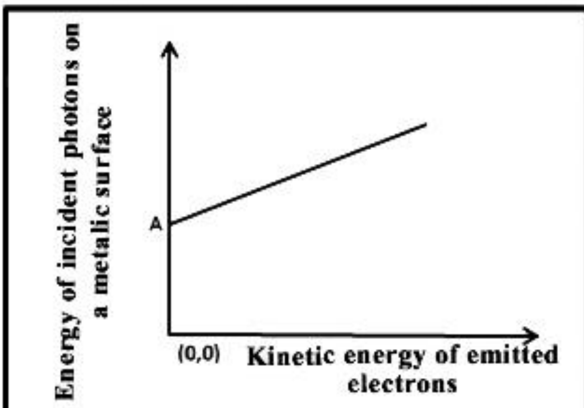
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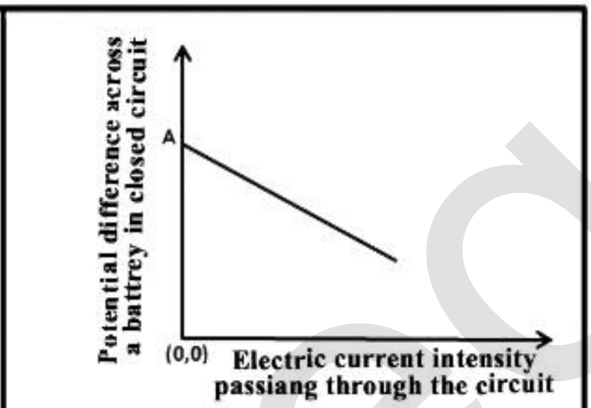
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Question 2:

A) First: <u>What does the point (A) indicates in the following two diagrams:</u>



1 - ....



2 - ....

Second: <u>A straight wire of length 50cm , moves perpendicularly on a uniform magnetic field , the following table illustrates the relation between the wire velocity (v) and the generated induced electromotive force across the wire terminals :</u>

v (m/s)	2.5	10	17.5	22.5
emf (V)	0.5	2	3.5	4.5

3- Draw the graphical relation between (emf) on the vertical axis and (v) on the horizontal axis .(In the graphic paper)

4- From the graph find magnetic flux density value .

....

....

B) First: <u>Mention an example of an active medium for Laser production which is excited by :</u>

5- Optical energy .

....

....

6- Electrical energy .

....

....

B) Second: <u>Write the mathematical relation which illustrates each of the following:</u>

7- The coefficient of mutual induction of two coils .

....

8- Law of mass action for a silicon crystal doped with phosphorus atoms at thermal equilibrium .

....

C)

9- Explain how a microammeter of coil resistance 250Ω is converted to an ohmmeter (without drawing) .

....

....

....

....

10- The table shows the microammeter reading (I) and the external resistance (R_x) which is connected to its circuit . Find the value of the standard resistance used ?

R_x Ω	I μA
0	200
7500	100
∞	0

....

....

....

....

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....

11-Find the value of the emf of the used cell , neglecting its internal resistance . Find also the value of (R_x) which makes the pointer deflect to 50 μA using the previous table.

....

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12- What is the function of the standard resistance used in the ohmmeter .

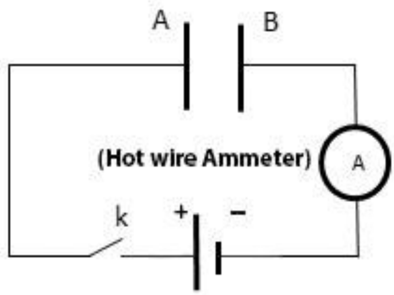
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Question 3:

A) In the shown electric circuit , if the key (K) is switched on :



1- The potential of plate .... rises gradually.

2- The potential of plate .... lowers gradually.

3- The ammeter reading when the capacitor is full charged ....

4- When replacing the battery with an AC source, the potential difference between the capacitor plates will has the same phase with ....

B)What is the function of each of the following :

5-The spectrometer .

....

....

6- The reference beams in holography .

....

....

7- The filament in Coolidge tube .

....

....

8- The two brushes in the electric motor.

....

....

C) First: **<u>A radio station of power 100kw , emits wave whose frequency 92.4 MHz. If Plank's constant is 6.625X10^{-34} js , calculate:</u>**

9-The energy of the emitted photon .

....

....

....

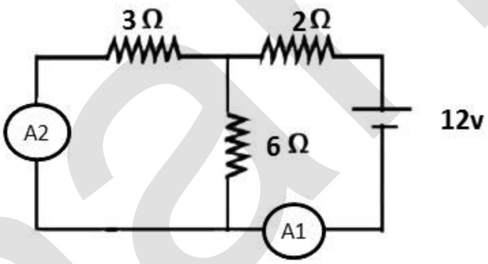
10- The number of emitted photons in a second.

....

....

....

Second :<u>In the shown circuit , what is the reading of the ammeter:</u>



11- (A_1)

....

....

....

....

12- (A_2)

....

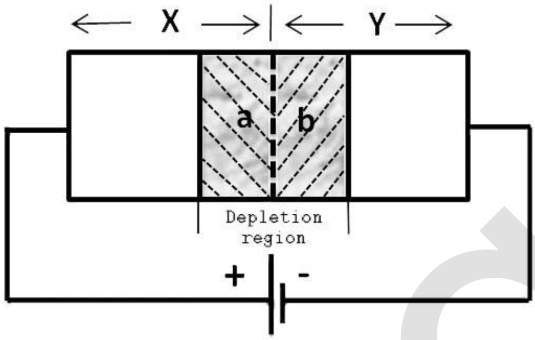
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Question 4:

A) <u>The opposite figure shows a pn junction connected to a battery (a reverse bias) . In this case , what is the kind of.........?</u>



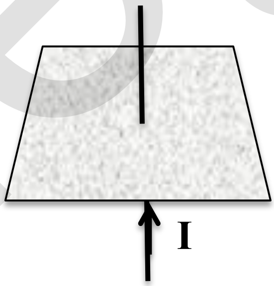
1- The crystal (X): ....

2- The crystal (Y): ....

3- The formed charges in the area (a): ....

4- The formed charges in the area (b): ....

B) First : <u>In the shown experiment iron filing sprinkled on a horizontal paper board penetrated by a straight vertical wire . What will happen for the iron filing , in the following cases :</u>



5- When passing electric current in the wire and gently tapping the board .

....

....

6- When increasing the electric current intensity in the wire with continuous tapping on the board

....

....

Second : <u>What is the physical model used in the study of each of the following ....?</u>

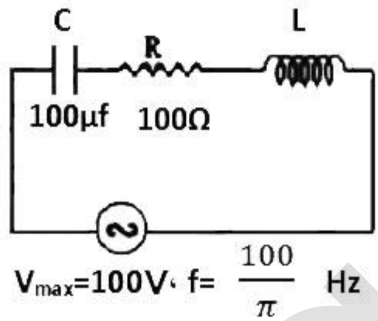
7- The wave properties of light .

....

8- The particle properties of light .

....

C) <u>In the shown electric circuit when the current intensity passing through it is as great as possible . Calculate each of ….</u>



9- The self-induction of the coil .

10- The total circuit impedance .

11- The electric current intensity that passes through the circuit .

12- The power consumed in the circuit.

Question 5:

A) Choose the correct answer for each of the following :

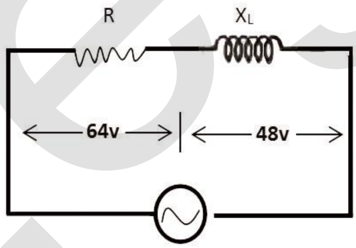
1- The emission of electrons from a metallic surface when low light intensity incident on it , according to the classical model depends on:

(a) The frequency of the incident light regardless of its intensity .

(b) The intensity of the incident light regardless of its frequency .

(c) The surface exposure time to light regardless of its frequency and intensity.

2- In the opposite figure , the source voltage is equal to :



(a) 16V (b) 80V (c) 112V

3-In helium- neon laser the stimulated emission photons are emitted from neon atoms due to its relax from the metastable state to the state :

(a) E_0 (b) E_1 (c) E_2

4-The direction of the perpendicular magnetic dipole moment on the area of the coil is determined by the rule of :

(a) Right hand screw . (b) Fleming's right hand (c) Lenz

B) First: Mention the rule's name that determine the direction for each of the following:

5- The force by which a magnetic field acting on a straight wire placed perpendicularly to the field , when an electric current passes through it.

....

6- The magnetic field inside a solenoid at the instant of cutting off the current in it .

....

Second: <u>What is the scientific idea used in the study of each of the following:</u>

7- The criminology .

....

8- The electron microscope **.**

....

C) First: <u>A carbon resistance of length 2m and a cross sectional area $10mm^2$, calculate .</u>

9-Its value, if you know that the carbon resistivity is $1.5x10^{-5}$ Ω.m .

....

....

10-The current intensity through it, when it is connected with a battery of emf 15V and internal resistance of 2Ω

....

....

Second: <u>A Gamma ray photon of energy $6.62x10^5$ eV incident on a free electron which is scattered with energy $5x10^5$ eV in a certain direction. Calculate :</u>

11- The increase in the electron kinetic energy in Joules unit .

....

....

12- The decrease in the photon mass . **($h=6.625X10^{-34}$ j.s , $c= 3x10^8$ m/s)**

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ورقة رسم بيانى

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Draft